Leveraging Public Data to Track the Allied Health Workforce: The Effect of COVID-19 Data Updates

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BACKGROUND

The Center for Health Workforce Studies at the University of Washington (UW CHWS) leverages data to track the allied health workforce using multiple public datasets. Previously, our team developed interactive web-based dashboards that allow users to compare state supply estimates (both unweighted and weighted) and examine aging trends among allied health professionals in three-year intervals (2011, 2014, 2017).[1,2] We also created dashboards showing commuting patterns for allied health professionals (2013-2017).[3] These tools were designed to complement a series of reports describing national supply estimates,[4] state supply estimates[5] and commuting patterns[6] for allied health professionals.

This brief describes an update of our previous work in which 2020 data was added to the state supply and aging trends dashboards. To illustrate how the COVID-19 pandemic influenced data collection and workforce supply estimates, we also incorporated 2019 and 2021 data in this update. Key questions we set out to answer:

- How has the estimated supply and employment of allied health care workers in the U.S. changed at the national and state levels compared with before the COVID-19 pandemic, and how has the pandemic appeared to have affected estimates?
- What are the trends by age cohort and sex for 2019-2021, and are there any signs of early retirement for allied health care workers?

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METHODS OVERVIEW

We use two public data sources for our web-based dashboards. First is the American Community Survey (ACS), a nationally representative household survey conducted annually by the U.S. Census Bureau on approximately 1% of the U.S. population. ACS collects a number of self-reported household characteristics as well as characteristics for each member of a household including occupation and industry.[7] Second is the Occupational Employment and Wage Statistics (OEWS), which is a semi-annual survey conducted by the U.S. Bureau of Labor Statistics on 200,000 non-farm businesses in the U.S. OEWS provides annual headcounts by occupation at the national and state levels. It does not provide additional demographic characteristics of the workforce.[8]

Occupation titles in both data sources map to the 2010 and 2018 Standard Occupational Code (SOC) system with a crosswalk to match job codes and titles over time.[9,10] We selected nine allied health occupation titles representing a range of educational requirements and work settings (**Figure 1**).

Figure 1: Occupations examined and data used for updated health workforce supply estimates

Allied Health Occupations[a]

- Clinical Laboratory Technologists and Technicians
- Dental Hygienists
- Diagnostic-Related Technologists and Technicians
- Medical Assistants
- Occupational Therapists
- Physical Therapists
- Respiratory Therapists
- Social Workers (with and without Master's degree)
- Speech-Language Pathologists

[a] 2010 and 2018 U.S. Bureau of Labor Statistics Standard Occupational Classification System

Data Sources[b]

American Community Survey (ACS)

- Annual survey conducted by U.S. Census Bureau
- Nationally representative household survey of approximately 1% of the U.S. population

Occupational Employment and Wage Statistics (OEWS)

- Semi-annual survey conducted by U.S. Bureau of Labor Statistics
- Employment and earnings data on approximately 200,000 non-farm businesses reported annually

[b] For both data sources, the study sample was limited to age 18 and older and employed in the U.S.

We examined the reliability of estimates from each dataset based on relative standard error (RSE) values that were reported by OEWS and that we calculated for the ACS. We used stoplights in the dashboards to show states with unreliable workforce estimates due to higher RSEs. Based on published recommendations, estimates with a RSE of 25% to 49.9% should be interpreted with some caution, and the estimates with a RSE of 50% or greater should be regarded as unreliable.[11,12] The stoplights provide a visual signal of these recommendations, with a yellow light indicating the estimate should be treated with caution and a red light indicating that the estimate is unreliable. In some cases, the information needed to calculate an RSE was not provided by the data source. These estimates are indicated by a question mark.

COVID-19 Pandemic Effect on Survey Estimates

In the ACS, the U.S. Census Bureau applied experimental weights to adjust for low response rates in 2020. This resulted in smaller RSE values for 2020 compared to other years, making the reliability of survey estimates on the size of an occupation appear to be better than in other years. 2020 ACS estimates should therefore be used with caution. The U.S. Census Bureau provides detailed documentation on these and other challenges.[13,14]

The features of the OEWS methodology are such that 2020 estimates include data collected both before and during the pandemic. As a result, estimates may not fully reflect changes in employment during 2020. The panel nature of OEWS methodology may also affect estimates in 2021 and 2022. Given the rolling nature of the panel surveyed, fluctuations in occupation size due to the pandemic are tempered. However, each of the 2020, 2021, and 2022 years of data should be used with caution. The Bureau of Labor Statistics provides detailed documentation on these and other challenges.[15,16]

NATIONAL AND STATE SUPPLY ESTIMATES: EXAMPLES OF FINDINGS

Special Considerations When Using ACS 2020 Data

Extracted from our supply estimates dashboard based on ACS data from 2019 and 2020[1], **Figure 2** shows that the estimated number of medical assistants (MAs) in Minnesota has a smaller sampling error in 2020 (RSE = 5%) compared to the larger sampling error in 2019 (RSE = 18%). Fewer stoplights on the 2020 map compared to 2019 reflect the smaller sampling error resulting from how the U.S. Census Bureau created weights in the 2020 ACS data. This difference is due to changes in the statistical methods used rather than a true difference in the uncertainty of the estimates. In contrast, error estimates using 2019 and 2020 OEWS data (**Figure 3**) are more similar due to the panel sampling design used by the BLS.

Figure 2 : Estimated Number of Medical Assistants in Minnesota Using ACS 2019 Data (Left) and ACS 2020 Data (Right)

1→ Occupation
Medical assistants

2→ Data Source and Year (left side)
American Community Survey 2019

3→ Data Source and Year (right side)
American Community Survey 2020**

**Use ACS 2020 data with caution. See FAQ for more details

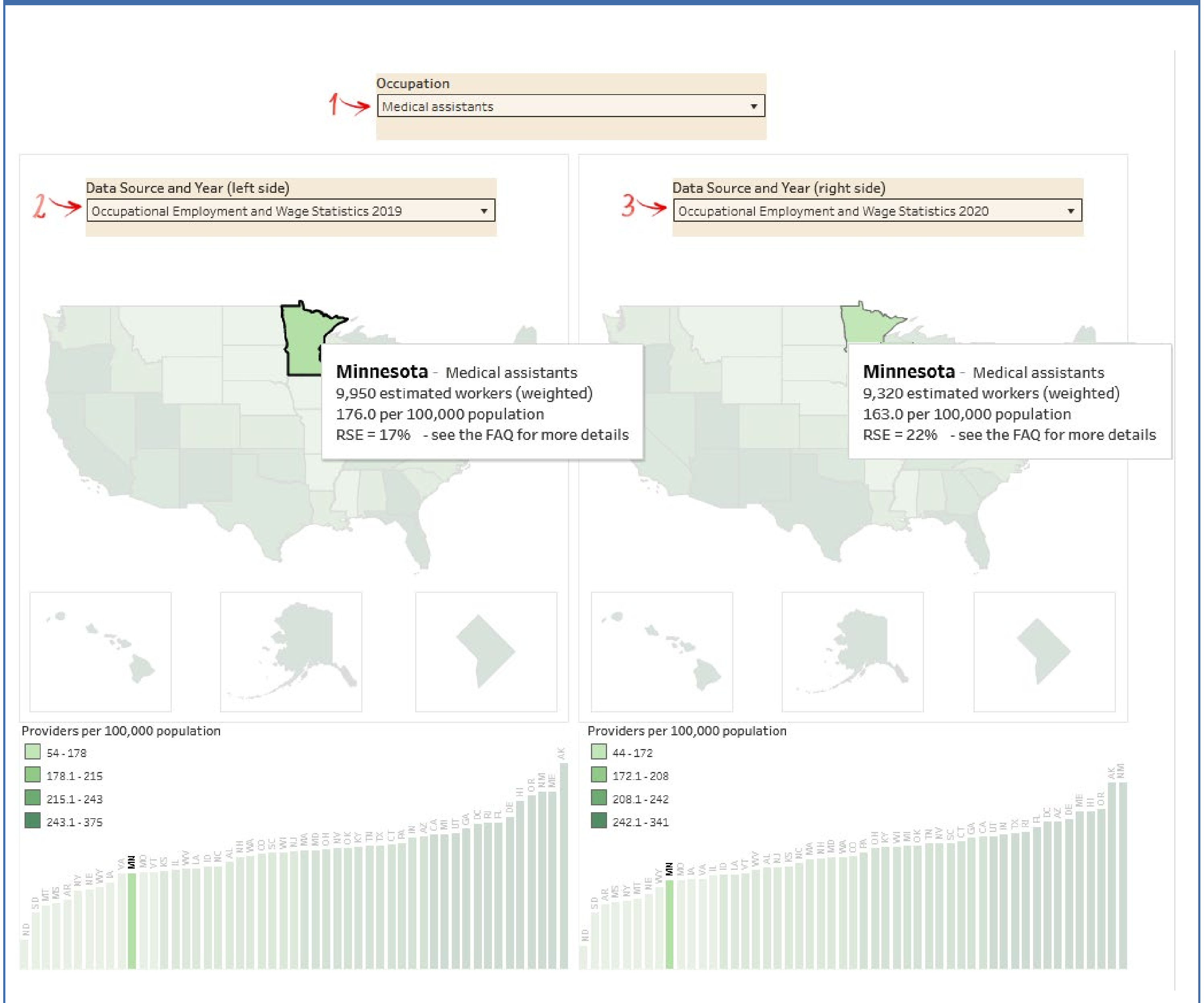
Minnesota - Medical assistants
5,663 estimated workers (weighted)
based on 64 survey responses (unweighted)
100.0 per 100,000 population
RSE = 18% - see the FAQ for more details

Minnesota - Medical assistants
5,106 estimated workers (weighted)
based on 64 survey responses (unweighted)
89.0 per 100,000 population
RSE = 5% - see the FAQ for more details

Providers per 100,000 population
27 - 138
138.1 - 167
167.1 - 214
214.1 - 350

Providers per 100,000 population
64 - 129
129.1 - 157
157.1 - 193
193.1 - 224

Figure 3: Estimated Number of Medical Assistants in Minnesota Using OEWS 2020 Data (Left) and OEWS 2021 Data (Right)



Using Multiple Years of Data to Show Age Distribution Trends Over Time

Our dashboards show age distribution trends by occupation in 2011, 2014, 2017, 2019, 2020, and 2021. Several different patterns emerged depending on the occupation.

Figure 4 shows that MAs have a consistent age distribution over the years. The declining percentage of workers in each successive age category repeats in each year of data, indicating that this is likely an occupation that attracts a younger population, with turnover increasing with age.

Figure 4: Estimated Percentage of Medical Assistants in Each Age Category Comparing Multiple Years of ACS Data

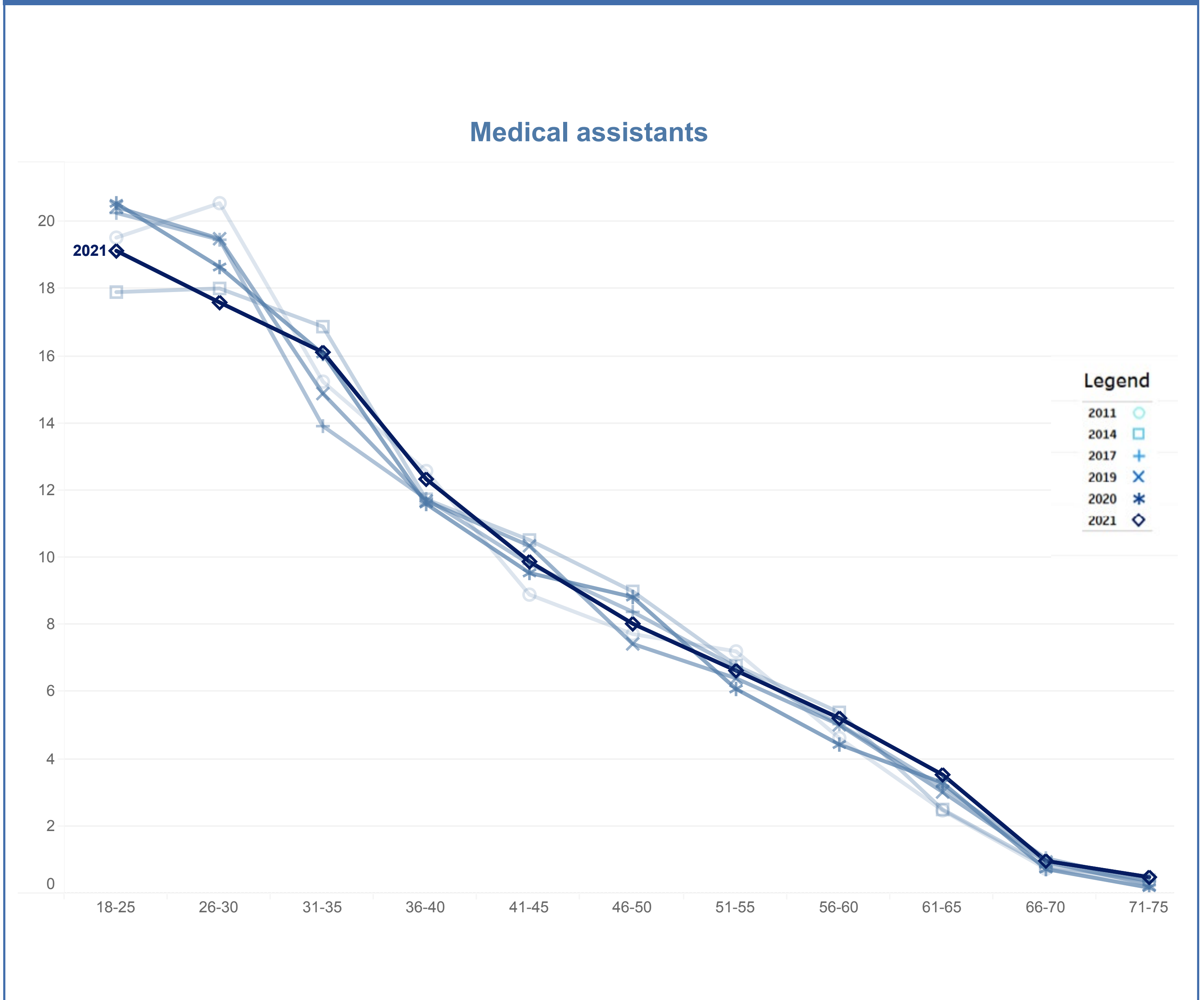


Figure 5a: Estimated Number of Clinical Lab Technologists and Technicians in Each Age Category Using ACS 2011 and ACS 2014 Data

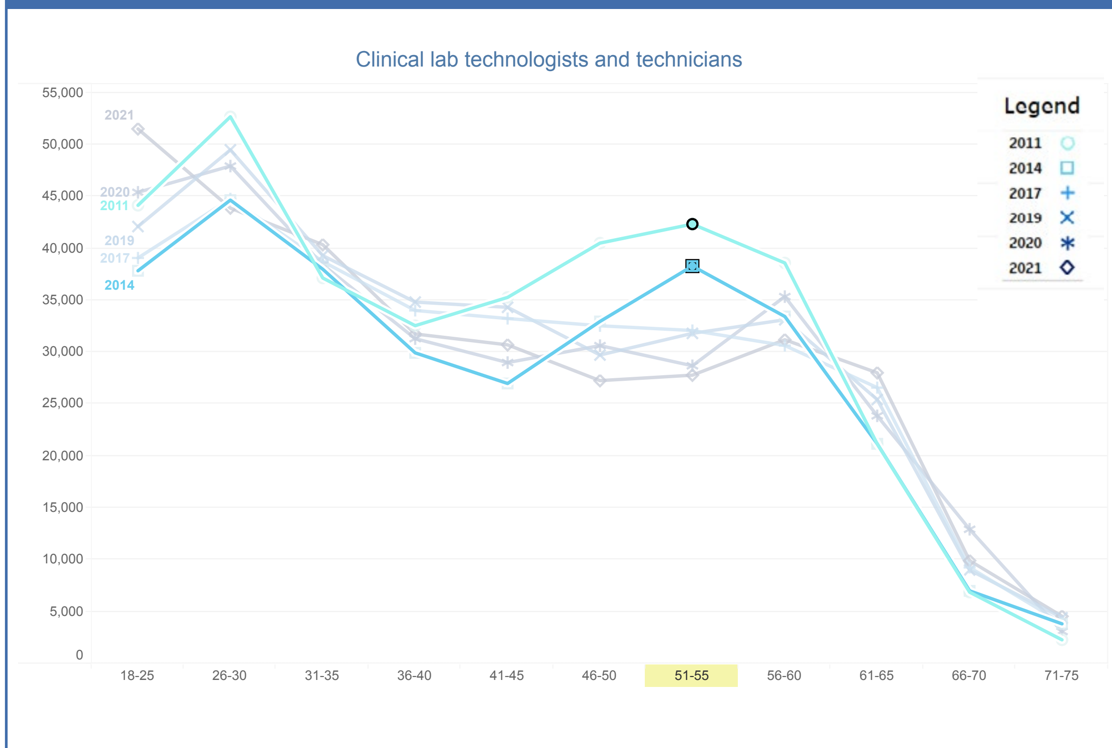
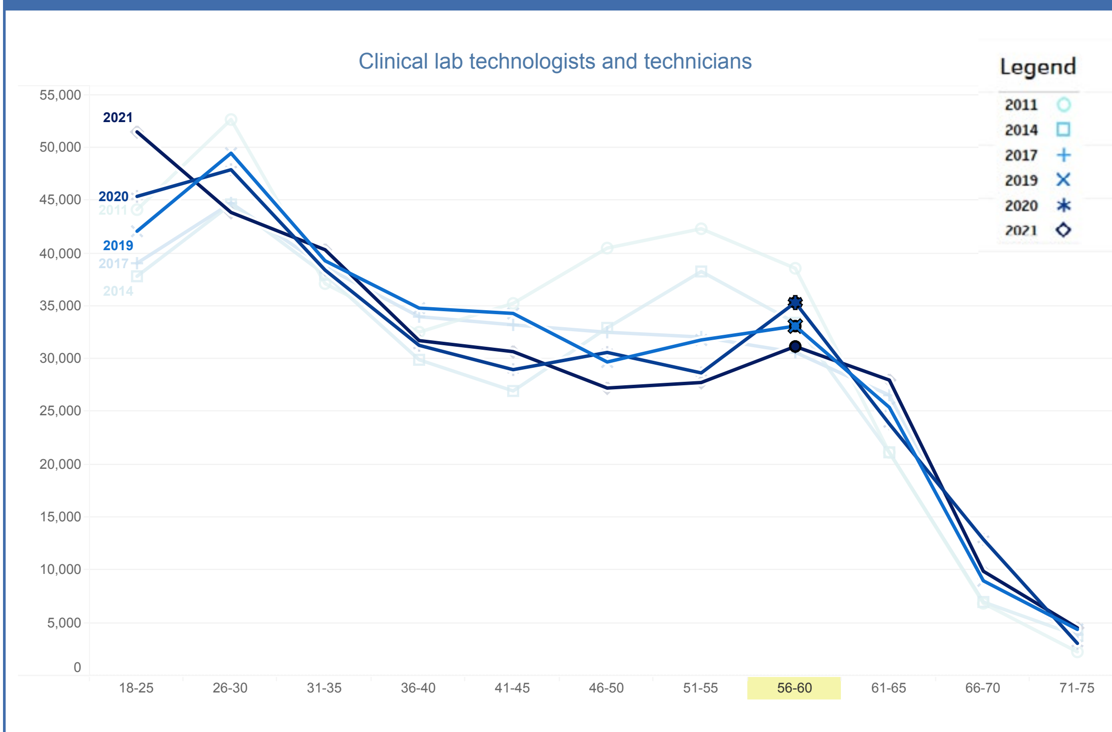


Figure 5b: Estimated Number of Clinical Lab Technologists and Technicians in Each Age Category Using ACS 2019, 2020 and 2021 Data



In contrast, the age pattern of clinical lab technologists and technicians has been changing over time. In earlier years (2011 and 2014), there was a bimodal distribution, with one peak in the 26-30 age group and another peak in the 51-55 age group (**Figure 5a**). One reason for the bimodal distribution may be that this occupation code represents multiple occupations with different educational requirements and career pathways.[17] It also reflects that the occupation employed a high percentage of workers nearing retirement (age 51 - 55 years old) in 2011 and 2014. Looking at 5-10 years later, we see a less defined peak in the 56 - 60 and 61 - 66 age groups when examining the 2019, 2020, and 2021 data, indicating that some of the workers previously in the 51 - 55 age group (2011 and 2014) may have retired (**Figure 5b**).

CONCLUSIONS

National and state estimates of allied health workforce characteristics are always subject to the limitations of the data collection methods. The 2020 onset of the COVID-19 pandemic reduced the response rates of both ACS and OEWS surveys. ACS sampling methodology made it more sensitive to the reduced response rates in 2020 compared to the OEWS methodology. However, when using 2020 data from either survey, estimates should be interpreted with caution. Some of the changes in the estimated number of workers in 2020 compared to other years may be the result of real changes in supply from, for example, temporary furloughs in clinics or labor exits due to sickness or childcare responsibilities. On the other hand, some of the changes may be a result of low response by individuals from any one profession. The findings from this study are intended to advance knowledge about changing patterns of available supply of allied health professionals over time and patterns important to understanding the labor market, while concurrently indicating where caution is advised when interpreting the estimates.

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